Technostress in Accounting Professionals: A Quantitative Examination of the Differences Between Managers and Non-Managers

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The accounting profession is on the brink of historic transformation due to technological advances. Technostress is a type of stress that originates from the interaction with information and communication technologies (ICT). The negative physiological and psychosomatic consequences can be devastating to those employees and organizations afflicted. The purpose of this study is to examine the differences in technostress creators (i.e., techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty) as measured by the Technostress instrument (Tarafdar, Tu, Ragu-Nathan, & Ragu-Nathan, 2007), perceived by 190 accounting professionals in both management and non-management roles. Findings exposed significant differences in technostress perceptions between managers and non-managers.

INTRODUCTION

The speed at which technology is evolving is nearly incomprehensible. By 2020, the world will have more than 200 billion devices connected to the Internet of Things (IoT) (Marr, 2018). Computer processing capabilities double every 12 to 18 months while network bandwiths double every 6 months (Marr, 2018). Over 90% of the world's data was generated in only the last two years (Hale, 2018). Global data production is approximately 2.5 quintillion bytes per day (Hale, 2018). By 2025, the world will produce 163 zettabytes (one zettabyte = one trillion gigabytes) of data per year (Cave, 2017). Across the globe, 5 billion internet searches occur daily, performed by 3.7 billion users, with 77% of them conducted on Google and over half of them from mobile telephones (Marr, 2018). Between 1790 and 1800, the U.S. Patent Office granted approximately 230 patents for the entire ten-year period. Today, 230 patents are awarded every 7 hours (U.S. Patent Office, 2018).

Technology has reshaped almost every aspect of how companies operate. For one, information and communication technologies (ICT) have changed how businesses communicate. Communication is instantaneous. Workplace teams can collaborate globally without geographic obstacles. Almost 5 million workers tele-commute from home at least 50% of the time with over 70% of employees working remotely at least once per week (Efron, 2018; GlobalWorkplaceAnalytics.com, 2018). Electronic communications have enabled billion-dollar companies like WordPress to run without any physical office space or use of email (Leibowitz, 2018).

Additionally, technologies have made it possible for companies to restructure and streamline their business processes. Workplaces are more productive and cost effective than ever before. Approximately 78% of business leaders recently surveyed indicated that automation has saved their companies on

average 3 hours per workday or almost $5 million per year (WorkMarket, 2018). The competitive business landscape demands that organizations are more agile so as to strategically sustain threats, minimize weaknesses, exploit strengths, and harness opportunities. Technology can improve the preemptive stance of a company to more effectively plan for and respond within the unpredictable global business environment (Chakravarty, Grewal, & Sambamurthy, 2013).

The use of information technology (IT) in accounting is extensive and fundamental to daily operations. However, the profession is anticipating the arrival of one of the most transformative periods of change in the history of the occupation. The advantages of the use of IT in the accounting profession are many and include increased functionality, improved accuracy, faster processing, better reporting, and the availability of more in the way of software tools and platforms. However, the ICT invasion will spur challenging working conditions, instability, and dysfunction, resulting in increased workplace stress, role overload, and technostress (Ashforth, Kreiner, & Fugate, 2000; Suprateek, Xiao, Saonee, & Manju, 2012). Employees working in a computerized setting experience higher levels of stress due to increased workloads, hyper-tasking, an inability to keep pace with technological change, the threat of being replaced, the pressure to work hurriedly and respond immediately to workplace requests, and the need for frequent training (Agervold, 1987; Fuglseth & Sorebo, 2014; Kinman & Jones, 2005; Jex, 1998). Given the practical implications and the understanding of technology-generated stress, i.e., technostress, in the work environment, the rationale of this particular research study was to understand how this disorder affects accounting professionals and if any differences exist between management and non-management roles.

The accounting profession is a prime environment in which to study technostress. The convergence of the demand to adopt new technologies while concurrently acquiring of a scope of updated skills sets the stage for unparalleled levels of technostress within the accounting profession. However, only a handful of studies to date have even remotely begun to scratch the surface of how this stress disorder impacts the field (Chen, Silverthorne, & Hung, 2006; Longinus, Odigbo, & Onwumere, 2013). This study is of incredible importance to both research and practice.

LITERATURE REVIEW

Technostress

Technostress, also referred to as technological stress, computer stress, and technophobia, is a disorder that originates from and is aggravated by an inability to adapt to or cope with new technologies in a healthy way (Brod, 1984). First reported as a disease, technostress was later described as the adverse effects that technology has on the mind and body of a user (Weil & Rosen, 1997, p. 5). Tu, Wang, and Shu (2005) defined technostress as the damaging psychological consequences that direct or indirect technology use imparts on the thoughts, attitudes, and behaviors of the operator. A variety of physical, mental, and emotional symptoms may be presented by those who are techno-stressed including, but not limited to: fatigue, headache, increased cortisol production, feelings of fear, obsessive thoughts, inability to concentrate, depression, frustration, anxiety, persistent worry, irritability, fear, and suspicion (Cox et al., 2000; Mahalakshmi & Sornam, 2012; Riedl et al., 2012; Wang, Shu, and Tu, 2008).

Researchers have begun to study technostress in a variety of contexts to isolate the antecedents and multidimensional causes (Ayyagari, Grover, & Purvis., 2011; Bradshaw & Zelano, 2013; Boyer-Davis, 2018; Day, Scott, & Kelloway, 2010; Doll & Torkzadeh, 1989; Ennis, 2005; Jena, 2015; Ragu-Nathan, Tarafdar, Ragu-Nathan, & Tu, 2008; Tarafdar, Pullins, & Ragu-Nathan, 2011, 2014; Tarafdar et al., 2007; Tarafdar & Tu, 2011, 2011). Tarafdar et al. (2007) categorized the creators of technostress into five constructs: a) techno-overload, b) techno-invasion, c) techno-complexity, d) techno-insecurity, and e) techno-uncertainty. Techno-overload is described as a condition in which ICT users are forced to work more and faster. Techno-invasion occurs when ICT infringe upon and compel users to stay connected during non-work hours, upsetting the work-life balance. Techno-complexity stems from the increased time and effort spent by ICT users to update their skills, understand terminology, and learn how to operate new technologies. Techno-insecurity arises from user concern that their job may be eliminated by other

employees with more advanced technological skills or from automation. Techno-uncertainty is the apprehension that can perpetuate from the rapid turnover of technology and the indeterminate future outcomes than can result.

Technostress is a global pandemic, documented in literature around the world (Bozionelos, 1996; Khan, Rehman, & Rehman, 2013; Lee, Lee, & Yung, 2016; Tu et al., 2005). The consequences are pervasive and costly and reverberate throughout the worldwide economy. In the United States alone, the corporate cost of stress is more than $300 billion per year resulting from absenteeism, lost productivity, workplace accidents, and job turnover (American Institute of Stress, 2007). Stress is to blame for 50% of the 550 million workdays lost in the U.S. to absenteeism (2007). Studies have yet to estimate the effect that technostress has on healthcare and insurance costs but the impact is likely considerable.

Technostress can exacerbate role overload, or the conflict between job demands and the resources (time, skills, and fitness) available to fulfill them (Maslach & Jackson, 1982; Tarafdar et al., 2011). Role overload has been identified as a precursor of poor employee work performance (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964; Lazarus, 1991). Technostress has also been linked to decreased work productivity, job satisfaction, organizational commitment, innovation, and creativity (Brillhart, 2004; Burke and Greenglass, 1995; Hung, Chang, & Lin, 2011; Krinsky, Kieffer, Carone, & Yolles, 1984; Moore, 2000; Muir, 2008; Ragu-Nathan, et al., 2008; Shropshire & Kadlec, 2012; Simmons, 2009; Tarafdar et al., 2007, 2010, 2011). With prolonged exposure to technostress, workers can burn out at the job (Shropshire & Kadlec, 2012). Job burnout is evidenced to have a direct relationship with employee demotivation, performance problems, and job turnover (Simmons, 2009).

Technostress in the Accounting Profession

The momentum of technological change expected in the profession of accounting is unprecedented. Technology has and will continue to give rise to immense automation, driven by artificial intelligence and machine learning. According to the Pew Research Center (2016), accounting jobs are most at risk for elimination by automation. Therefore, the traditional accountant must adopt a new set of competencies in order to survive computerization and morph into the role of the modern accountant (Wessel, 2008).

Not only will future accountants have to become expert with a wide array of new technologies such as cloud platforms, digital currency, integrated software, blockchain, but they must also amass a litany of new skills to work efficiently and effectively with them. The modern professional environment suggests the need for more extensive IT proficiencies, improved strategic and critical thought as applied to work processes and procedures, sharpened analytical and Big Data mining skills, and relevant information security and risk management knowledge (Rindasu, 2017). The job description of the accounting professional has and will continue to change as technology advances.

Accountants, specifically accounting managers, will continue to play a vital role in the implementation and acceptance of new workplace technologies (Manguic, 2017). Often, accounting managers function as liaisons between corporate management and IT teams by evaluating technology solutions and making recommendations, performing cost-efficiency analyses, and conducting financial and capital plan forecasts and reports. Commonly, accounting managers are responsible to provide integrated enterprise resource planning (ERP) systems training to users throughout the entire organization.

Technostress in Accounting Managers and Non-managers

A burgeoning volume of literature has documented what work stress is, its antecedents and consequences, and relationships between leaders and followers (Bass & Bass, 2008; Connelly & Gooty, 2015; Hannah, Uhl-Bien, Avolio, & Cavarretta, 2009). Managers often describe themselves as being under a substantial amount of stress. According to Campbell, Baltes, Martin, and Meddings (2007), 88% of managers contend that work is their main cause of stress. Some research has concluded that managers experience more stress than non-managers because they are more likely to meet with threats and encounter challenges at the workplace and must maintain a model reputation so that others have confidence in and trust their decision-making skills (Baer, Dhensa-Kahlon, Colquitt, Rodell, Outlaw, &

Long, 2015; de Waal, 1982; Mazur, 1985; Van Vugt, Hogan, & Kaiser, 2008). Conflicting research has concluded that managers with a high degree of control at the workplace report less stress than non-managers (Skakon, Kristensen, Christensen, Lund, & Labriola, 2011). However, to date, the literature has not identified if any differences exist in the levels of technostress between leaders and followers in any disciplines or areas of business. Not only does this study investigate the perceived level of technostress in accounting professionals, but the research seeks to identify if there are differences between accounting managers and non-managers.

RESEARCH METHODOLOGY

To extend the literature related to technostress and its potential impact on the accounting workforce, the following research question was examined.

Research Question. *Is there a statistically significant difference in the level of technostress perceived by accounting professionals in management positions as compared to those serving in non-management roles?*

Omnibus Hypothesis. *There is not a statistically significant difference in the level of technostress perceived by accounting professionals in management positions as compared to those serving in non-management roles.*

Alternative Hypothesis. *There is a statistically significant difference in the level of technostress perceived by accounting professionals in management positions as compared to those serving in non-management roles.*

Sample and Research Instrument

A survey panel of global accounting professionals was used to collect data. The survey instrument was administered electronically to 190 accounting professionals. The instrument consisted of a seven-point Likert-scale survey containing questions from the Technostress Creators scale (Tarafdar et al., 2007). Demographic questions were also incorporated into the questionnaire.

Sample Size

A minimum total sample size of 128, or 64 participants per group, was estimated using G*Power 3.1.9, assuming an *a priori* power analysis, $\alpha = 0.05$, $\beta = 0.80$, and a medium effect size (Cohen, 1988). A total sample size of 190 exceeded the expected range required by the study.

Measures

Technostress observations were measured using the Tarafdar et al. (2007) Technostress Creators scale. The Technostress Creators scale is comprised of 23 questions, grouped into five constructs: (a) Techno-overload, (b) Techno-invasion, (c) Techno-complexity, (d) Techno-insecurity, and (e) Techno-uncertainty. Aggregated, the construct scores measure technostress.

An instrument should demonstrate a reliability of $\alpha = 0.70$ or greater (Babbie, 2010). The Technostress instrument has been tested and retested to yield a reliability of 0.71 α to 0.91 α (Tarafdar et al., 2007). In addition, each of the Technostress Creators was analyzed for significant differences in the scores between accounting managers and non-managers.

Hypothesis 1_0. *There is not a statistically significant difference in the level of techno-overload perceived by accounting professionals in management positions as compared to those serving in non-management roles.*

Hypothesis 1_a. *There is a statistically significant difference in the level of techno-overload perceived by accounting professionals in management positions as compared to those serving in non-management roles.*

Hypothesis 2_0. *There is not a statistically significant difference in the level of techno-invasion perceived by accounting professionals in management positions as compared to those serving in non-management roles.*

Hypothesis 2_a. *There is a statistically significant difference in the level of techno-invasion perceived by accounting professionals in management positions as compared to those serving in non-management roles.*

Hypothesis 3_0. *There is not a statistically significant difference in the level of techno-complexity perceived by accounting professionals in management positions as compared to those serving in non-management roles.*

Hypothesis 3_a. *There is a statistically significant difference in the level of techno-complexity perceived by accounting professionals in management positions as compared to those serving in non-management roles.*

Hypothesis 4_0. *There is not a statistically significant difference in the level of techno-insecurity perceived by accounting professionals in management positions as compared to those serving in non-management roles.*

Hypothesis 4_a. *There is a statistically significant difference in the level of techno-insecurity perceived by accounting professionals in management positions as compared to those serving in non-management roles.*

Hypothesis 5_0. *There is not a statistically significant difference in the level of techno-uncertainty perceived by accounting professionals in management positions as compared to those serving in non-management roles.*

Hypothesis 5_a. *There is a statistically significant difference in the level of techno-uncertainty perceived by accounting professionals in management positions as compared to those serving in non-management roles.*

ANALYSIS AND RESULTS

Descriptive statistics and Independent Samples *t*-tests were used to analyze the data. Descriptive statistics gathered included gender, age, education, accounting experience, average hours worked per week, organization size, and business sector.

Descriptive Statistics

Managers self-reported their gender as 50% male and 50% female whereas non-managers were predominately male (61%) with 38% female and 1% trans-male. Of the managers, 28% were between the ages of 31 to 35, 18% within the 36 to 40 year age range, and 13% aged 26 to 30, respectively. Non-managers were somewhat younger than the managers with 21% aged 26 to 30, 20% between 31 to 35 years old, and 14% within the 36 to 40 year age range. Interestingly, 8 to 10% of those surveyed just entered the workforce (18 to 25 years old) while 4% may soon be readying themselves for retirement (61 to 65 years old). Most managers indicated that their highest level of education was either a bachelor (46%) or masters (26%) degree, while non-managers denoted earning a bachelor (47%), associate (22%) or masters (14%) degree. About 6% of the sample did not complete a high school diploma or its equivalency while 2% earned a doctorate. As for accounting experience, a preponderance of managers have worked between 6 to 10 (33%), 1 to 5 (23%), or 11 to 15 (17%) years in the profession. Most non-managers conveyed their accounting tenure to be 1 to 5 (38%), 6 to 10 (28%), or 11 to 15 (13%). About 10% of the sample claimed to have dedicated between 26 to 35 working years to the profession with 2% who committed more than 40 years to the accounting field. A majority of managers reported that, on

average, they worked 46 to 50 (28%), 36 to 40 (25%), or 41 to 45 (20%) hours per week. Non-managers worked less hours on average, 36 to 40 (48%), 41 to 45 (27%), and 46 to 50 (12%).

TABLE 1
DESCRIPTIVE STATISTICS OF THE SAMPLE

	Managers		Non-Managers	
	n	%	n	%
Gender				
Female	50	50%	34	38%
Male	50	50%	55	61%
Trans-male			1	1%
Age (in years)				
Less than 18				
18 to 25	8	8%	9	10%
26 to 30	13	13%	19	21%
31 to 35	28	28%	18	20%
36 to 40	18	18%	13	14%
41 to 45	11	11%	11	12%
46 to 50	9	9%	7	8%
51 to 55	6	6%	6	7%
56 to 60	3	3%	3	3%
61 to 65	4	4%	4	4%
66 to 70				
Greater than 70				
Education				
No diploma	3	3%	3	3%
High school	12	12%	11	12%
Associate	11	11%	20	22%
Bachelor	46	46%	42	47%
Masters	26	26%	13	14%
Doctorate	1	1%	1	1%
Other	1	1%		
Accounting Experience (in years)				
Less than 1 year			2	2%
1 to 5	23	23%	34	38%
6 to 10	33	33%	25	28%
11 to 15	17	17%	12	13%
16 to 20	9	9%	4	4%
21 to 25	8	8%	4	4%
26 to 30	7	7%	5	6%
31 to 35	3	3%	2	2%
36 to 40				
More than 40			2	2%

TABLE 2
ORGANIZATION SIZE AND BUSINESS SECTOR OF THE SAMPLE

	Managers		Non-Managers	
	n	%	n	%
Organization Size (headcount)				
1 to 50	20	20%	19	21%
51 to 100	20	20%	12	13%
101 to 250	15	15%	7	8%
251 to 500	6	6%	8	9%
501 to 1,000	13	13%	9	10%
1,001 to 5,000	7	7%	18	20%
Greater than 5,000	19	19%	17	19%
Business Sector				
Publicly-traded	16	16%	26	29%
Privately-held	64	64%	50	56%
Governmental	13	13%	4	4%
Not-for-profit	7	7%	10	11%

Statistical Analysis

SPSS version 25 was used to conduct the statistical analysis. An Independent Samples *t*-test was selected for this study because the dependent variable, technostress, is continuous and the independent variable, position type, is dichotomous (manager or not a manager).

The assumption for normality was assessed using a one-sample Kolmogorov Smirnov (KS) test. The KS test confirmed that the technostress scores followed a normal distribution, $D(190) = 0.20$, $p < .05$. Homogeneity of variance was tested using Levene's Test for the Equality of Error Variances. The hypothesis of equal variance among the groups was accepted, $F(0.108)$, $p = 0.743 > 0.05$.

Technostress Creators

TABLE 3
INDEPENDENT SAMPLES *t*-TEST FOR DIFFERENCES BETWEEN THE TECHNOSTRESS SCORES

a. Group Statistics

	Category	N	Mean	Std. Deviation	Std. Error Mean
Scores	Managers	100	69.7300	17.93133	1.79313
	Non-Managers	90	60.7444	17.77674	1.87383

b. Independent Samples Test

		Levene's Test		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
	Equal Variances	F	Sig.	t	df	Sig.	Mean Difference	Std. Error Difference	Lower	Upper
Scores	Assumed	0.108	0.743	3.463	188	0.001	8.98556	2.59475	3.86698	14.10413
	Not Assumed			3.465	186.236	0.001	8.98556	2.59356	3.86901	14.10210

The Independent Samples *t*-test was conducted to compare overall technostress scores of accounting managers and non-managers. There was a significant difference in the technostress scores for accounting managers (M = 69.73, SD 1.79) and accounting non-managers (M = 60.74, SD 1.87), conditions; $t(188)=3.463$, $p = 0.001<0.05$. These results suggest that accounting managers have a greater perceived level of technostress than accounting non-managers.

Techno-overload

TABLE 4
INDEPENDENT SAMPLES *t*-TEST FOR DIFFERENCES BETWEEN THE TECHNO-OVERLOAD SCORES

a. Group Statistics

	Category	N	Mean	Std. Deviation	Std. Error Mean
Scores	Managers	100	16.59	5.043	0.504
	Non-Managers	90	15.42	5.842	0.616

b. Independent Samples Test

		Levene's Test		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
	Equal Variances	F	Sig.	t	df	Sig.	Mean Difference	Std. Error Difference	Lower	Upper
Scores	Assumed	3.830	0.052	1.478	188	0.141	1.168	0.790	-0.390	2.726
	Not Assumed			1.467	176.885	0.141	1.168	0.796	-0.403	2.739

A non-significant difference in the techno-overload scores was observed for accounting managers (M = 16.59, SD 5.043) and accounting non-managers (M = 15.42, SD 5.842), conditions; $t(188)=1.478$, $p = 0.141>0.05$. These results suggest that accounting managers do not differ in their perceptions of techno-overload as compared to accounting non-managers.

Techno-invasion

TABLE 5
INDEPENDENT SAMPLES *t*-TEST FOR DIFFERENCES BETWEEN THE TECHNO-INVASION SCORES

a. Group Statistics

	Category	N	Mean	Std. Deviation	Std. Error Mean
Scores	Managers	100	11.24	4.185	0.419
	Non-Managers	90	8.62	3.959	0.417

b. Independent Samples Test

		Levene's Test		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
	Equal Variances	F	Sig.	t	df	Sig.	Mean Difference	Std. Error Difference	Lower	Upper
Scores	Assumed	0.150	0.699	4.416	188	0.000	2.618	0.593	1.448	3.787
	Not Assumed			4.429	187.524	0.000	2.618	0.591	1.452	3.784

A significant difference in the techno-invasion scores was identified for accounting managers (M = 11.24, SD 4.185) and accounting non-managers (M = 8.62, SD 3.959), conditions; $t(188)=0.150$, $p = 0.000<0.05$. These results suggest that accounting managers have a greater perceived level of techno-invasion than accounting non-managers.

Techno-complexity

TABLE 6
INDEPENDENT SAMPLES *t*-TEST FOR DIFFERENCES BETWEEN THE TECHNO-COMPLEXITY SCORES

a. Group Statistics

	Category	N	Mean	Std. Deviation	Std. Error Mean
Scores	Managers	100	14.26	4.884	0.488
	Non-Managers	90	11.64	4.696	0.495

b. Independent Samples Test

		Levene's Test		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
	Equal Variances	F	Sig.	t	df	Sig.	Mean Difference	Std. Error Difference	Lower	Upper
Scores	Assumed	0.273	0.602	3.754	188	0.000	2.616	0.697	1.241	3.990
	Not Assumed			3.761	187.186	0.000	2.616	0.695	1.244	3.987

A significant difference in the techno-complexity scores was identified for accounting managers (M = 14.26, SD 4.884) and accounting non-managers (M = 11.64, SD 4.696), conditions; $t(188)=0.273$, $p = 0.000<0.05$. These results suggest that accounting managers have a greater perceived level of techno-complexity than accounting non-managers.

Techno-insecurity

TABLE 7
INDEPENDENT SAMPLES *t*-TEST FOR DIFFERENCES BETWEEN THE TECHNO-INSECURITY SCORES

a. Group Statistics

	Category	N	Mean	Std. Deviation	Std. Error Mean
Scores	Managers	100	14.97	3.834	0.383
	Non-Managers	90	13.66	4.179	0.441

b. Independent Samples Test

		Levene's Test		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
	Equal Variances	F	Sig.	t	df	Sig.	Mean Difference	Std. Error Difference	Lower	Upper
Scores	Assumed	0.290	0.591	2.261	188	0.025	1.314	0.581	0.168	2.461
	Not Assumed			2.251	181.347	0.026	1.314	0.584	0.162	2.467

A significant difference in the techno-insecurity scores was identified for accounting managers (M = 14.97, SD 3.834) and accounting non-managers (M = 13.66, SD 4.179), conditions; $t(188)=0.290$, $p = 0.025<0.05$. These results suggest that accounting managers have a greater perceived level of techno-insecurity than accounting non-managers.

Techno-uncertainty

TABLE 8
INDEPENDENT SAMPLES *t*-TEST FOR DIFFERENCES BETWEEN THE TECHNO-UNCERTAINTY SCORES

a. Group Statistics

	Category	N	Mean	Std. Deviation	Std. Error Mean
Scores	Managers	100	13.78	3.249	0.325
	Non-Managers	90	13.03	3.453	0.364

b. Independent Samples Test

		Levene's Test		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
	Equal Variances	F	Sig.	t	df	Sig.	Mean Difference	Std. Error Difference	Lower	Upper
Scores	Assumed	0.283	0.595	1.535	188	0.126	0.747	0.486	-0.213	1.706
	Not Assumed			1.530	182.938	0.128	0.747	0.486	-0.216	1.709

A non-significant difference in the techno-uncertainty scores was observed for accounting managers (M = 13.78, SD 3.249) and accounting non-managers (M = 13.03, SD 3.453), conditions; $t(188)=0.283$, $p = 0.126>0.05$. These results suggest that accounting managers do not differ in their perceptions of techno-uncertainty as compared to accounting non-managers.

TABLE 9
SUMMARY OF HYPOTHESIS TESTING RESULTS

Hypothesis	Variable	*p*- value	Results
H_0	Technostress	0.001	Rejected
H_1	Techno-Overload	0.141	Not Rejected
H_2	Techno-Invasion	0.000	Rejected
H_3	Techno-Complexity	0.000	Rejected
H_4	Techno-Insecurity	0.025	Rejected
H_5	Techno-Uncertainty	0.126	Not Rejected

The null hypothesis was rejected as accounting managers experience more technostress than their non-manager counterparts. Likewise, H_2, H_3, and H_4 were rejected as accounting managers perceived greater levels of techno-invasion, techno-complexity, and techno-insecurity as compared to non-managers. H_1 and H_5 were not rejected as differences were not observed between the groups related to techno-overload and techno-uncertainty constructs.

DISCUSSION

The aim of the study was to investigate technostress and its effects on the accounting profession. The results showed that accounting managers experience significantly more technostress than their non-manager counterparts. Moreover, accounting managers reported greater techno-invasion, techno-complexity, and techno-insecurity than non-managers. Techno-overload and techno-uncertainty construct scores were insignificantly different between the groups.

Technostress has a more pronounced impact upon accounting managers. Advances in information technologies have markedly transformed the occupation of the accounting professional. Manual accounting work, such as data entry, reporting, and tax return preparation is being automated by artificial intelligence, digital chatbots, and blockchain processing (Frey & Osborne, 2017). Now, accountants must not only have strong practical skills and the ability to apply and interpret accounting principles, standards, codifications, regulations, and tax laws, but it is expected that they possess a wider range of technological, analytical, and critical thinking competencies (Damasiotis, Panagiotis, Santouridis, Nikolopoulous, &

Tisfora, 2015). The information age has forced accounting managers to concurrently transform themselves and their staff into the roles of the modern accountant thereby amplifying their technostress.

Accounting managers serve as intermediaries between IT, their staff, and the rest of the firm. This added layer of complexity may be another reason why accounting managers experience more technostress than non-managers. Furthermore, if accounting managers are more transactional or laissez-faire in their leadership style, they may experience more technostress than transformational leaders or followers (Boyer-Davis, 2018).

In this study, managers experienced more techno-insecurity than non-managers. Perhaps by way of their responsibilities for their work and that of their staff, managers may feel more obligated to remain at the office or stay tethered to the virtual workplace longer than their non-manager counterparts. By way of cloud computing, the rapid exchange of accounting information may inundate the accounting manager with a higher volume of client questions and email requests. Corporate expectations may be that managers remain plugged in around the clock.

Techno-complexity is more often observed in accounting managers because for one, those in supervisory roles are usually required to instruct staff on how to use new technologies. Therefore, from an end-user perspective, accounting managers must know the technologies better than anyone in the firm. Accounting managers must ensure that employees can properly and effectively use accounting-related ICT. They must understand how the systems or processes influence the control and risk environments for their firms and clients. They, themselves, must also stay up-to-date so as to assist their staff and other users within the organization. Non-managers do experience techno-complexity but at a reduced level since they may only be accountable for their own technological understanding.

Non-managers and managers, alike, can be consumed by techno-insecurity, or a perception of being unable to keep up with the pace of the technological revolution. However, managers were identified as experiencing more techno-insecurity than their subordinates. As companies strive to computerize tasks, managers may find themselves with fewer staff. Despite automation, more work may fall upon fewer employees. In addition, fewer managers may be needed with a reduce workforce.

Managers and non-managers experience the same degree of techno-overload. One possible reason is that both groups have comparable work demands. Managers are in charge of their work and that of their staff. Non-managers complete tasks given to them by their managers while servicing clients or other stakeholders. Along with internal and external requirements, managers and non-managers alike are attempting to stay up to date with the information age. As accounting technologies change, accountants or otherwise must quickly learn and adapt to provide service without delay. Moreover, as tasks are automated, the expectation may be that more work can be performed in a shorter period of time and often with fewer employees. Working faster due to new technologies shows no discrimination between management and non-management roles.

Lastly, managers and non-managers had similar techno-uncertainty experiences. As the computer era continues to unfold, no one accountant has a crystal ball to fully predict future outcomes. While AI continues to be studied and adapted to everyday life and business functions, accountants may find themselves being replaced by technology that can not only crunch the numbers and count the beans but may one day be able to use advanced algorithms and machine learning to audit transactions, detect fraudulent practices, recommend tax strategies, and find accounting errors. The many types of accounting jobs ranging from for-profit, not-for-profit, and governmental entities, will all be affected by technological change. Therefore, every accountant, regardless of position type, may be subject to the same level of uncertainty about their future career trajectory in the field.

This study bridges a research gap and supplies accounting practice with a critical awareness that technostress may afflict accounting managers more adversely than staff. The undesirable effects of technostress include decreased job satisfaction and increased job turnover (Ragu-Nathan, et al., 2008; Simmons, 2009; Tarafdar et al., 2007). A recent study of over 40,000 accounting employees concluded that managers have a higher rate of job turnover as compared to non-managers (Hossein, 2017). Therefore, it is plausible that technostress may be an underlying mediating factor of this statistic.

If accounting bosses are overwhelmed and techno-stressed, they may unknowingly spread the condition to their workforce. Stress contagion is a psychological reaction whereby observers become anxious simply by witnessing those undergoing a stress event without experiencing the stress themselves (Erkens et al., 2019). A stress epidemic can occur, infecting the work environment, plaguing worker morale and performance. Hence, not only can a stressed leader be less effective in their role, but they also can trigger workplace dysfunction and deviance simply by displaying stress responses (Zhang and Bednall, 2015). The more stressed a leader is, the more abusive their supervision of subordinates may be (Schyns and Schilling, 2013; Harms, 2016; Harms, Bai, & Han, 2016).

LIMITATIONS

Although the study was limited by the use of a survey panel and accountants from all business sectors, position types, and company sizes were included, bias from this cross-sectional design will not influence the conclusions, as any common-method variance is systematic. Another limitation of the study was that managers were not classified by their level of responsibility nor were the number of direct reports identified. Qualitative responses, which could have further enhanced the understanding of the perceived technostress experienced within the accounting profession, were not elicited from the survey participants. Finally, the survey panel drew from a global population. Technostress may differ across diverse cultures and geographic regions.

FUTURE RESEARCH

In this relatively new field of study, many technostress research areas are currently uncharted and demand exploration. Future research should dissect technostress perceptions and particularly, in the accounting profession, to establish if variations exist among job positions and management ranks. In addition, technostress perceptions should be evaluated within and across professions to learn if some industries experience more or less than others. Qualitative research should be piloted to learn more about the technostress phenomenon and its dimensions. Additional research is warranted to determine if technostress is a catalyst of job turnover in the accounting profession. Another area of investigation worthy of pursuit is the discovery of technostress-specific coping strategies and management techniques to minimize its damaging physiological and psychosomatic consequences. This knowledge is essential for employers to facilitate healthy organizations with satisfied and productive employees. Finally, the Technostress Creators scale (Tarafdar et al., 2007) should be reexamined for inclusion of another construct that considers the cyber-social stresses of ICT use at the workplace such as bullying and incivility (Vranjes et al., 2017).

CONCLUSION

The accounting profession is on the brink of historic transformation due to the rapid rise of technological advances. Thus, the profession must brace itself not only for the wave of change but for the storm of technostress that may result. From this study, a new awareness has been brought to light that exposed the distinctions of perceived technostress between managers and those in non-supervisory roles. Companies can begin to develop customized approaches to reduce workplace technostress to more effectively navigate the truly profound, wide-scale changes that are expected.

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